

# COLLEGEWIDE COURSE OUTLINE OF RECORD

## MAT 201, BRIEF CALCULUS I

COURSE TITLE: Brief Calculus I

COURSE NUMBER: MAT 201

PREREQUISITES: Successful completion with a "C" or better in MAT 131 Algebra  
MAT 133 College Algebra, or MAT 136 College Algebra

DIVISION: General Education

PROGRAM: General Education

CREDIT HOURS: 3

CONTACT HOURS: Lecture: 3

DATE OF LAST REVISION: Spring, 2004

EFFECTIVE DATE OF THIS REVISION: Summer, 2005

CATALOG DESCRIPTION: An introductory course in calculus. This course studies the fundamental concepts and operations of calculus including algebraic, exponential and logarithmic functions: limits, continuity, derivatives, points-of-inflection, first-derivative test, concavity, second-derivative test, optimization, antiderivatives, integration by substitution, and elementary applications of the derivative and of the definite integral.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

1. Identify the domain and range of functions.
2. Graph functions.
3. Apply the properties of exponential and logarithmic functions.
4. Find the limit of a function.
5. Find the intervals over which a function is continuous or discontinuous.
6. Use the rules of differentiation.
7. Determine points of inflection and concavity.
8. Use first and second derivatives to sketch curves and to solve optimization problems.
9. Relate antiderivatives and integrals.
10. Calculate definite and indefinite integrals by substitution.
11. Use derivatives and integrals to solve practical problems.
12. Use a scientific and/or graphing calculator proficiently as related to coursework.

COURSE CONTENT: Topical areas of study include --

Functions

Average value of a function

Continuity

Maximum and minimum of functions

Limits

Implicit Differentiation

Derivatives

Points of inflection

First-derivative test  
Concavity  
Antiderivatives  
Integration by substitution  
Application of intervals and derivatives

Second-derivative test  
Optimization  
Integrals  
Related rates

#### ACADEMIC HONESTY STATEMENT:

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

#### ADA STATEMENT:

Ivy Tech State College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.